

CLAIMS

We claim:

- 5 1. An order merging system, the system comprising:
- a pair of first case guides having a pair of twisted lanes, the first case guides being downwardly sloped for guiding at least one product case therealong in each of the first case guides;
 - a pair of raisable guides connected downstream of the first case guides and in communication therewith;
 - a pair of second case guides in communication with the raisable guides, the raisable guides being lowered to allow the product cases from the first case guides to merge onto the second case guides.
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- 15 2. The system, according to claim 1, includes:
- at least two accumulating conveyor systems, each accumulating system being dedicated to a different product unit, each accumulating conveyor system having at least one pair of the first case guides, each of the first case guides receiving at least one case of the same product thereon.
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- 25 3. The system, according to claim 2, includes:
- a mixing conveyor for feeding the cases away from the accumulation conveyor systems, the mixing conveyor being connected to the accumulating conveyor systems and located downstream therefrom, the mixing conveyor including the second case guides, the second case guides being continuous with the first case guides.
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4. The system, according to claim 2, in which a depalletizing station is connected to the accumulating conveyor system.
5. The system, according to claim 2, in which at least two palletizing stations are connected to the mixing conveyor.

6. The system, according to claim 3, in which the accumulating conveyor system includes a conveyor end portion and a sloped gravity conveyor, the first case guides running from the conveyor end portion to the mixing conveyor via the sloped gravity conveyor.

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7. The system, according to claim 6, in which the conveyor end portion and the sloped gravity conveyor each includes a pair of independent product accumulation lanes.

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8. The system, according to claim 7, in which the conveyor end portion is a hingeable conveyor hingeably connected to the sloped gravity conveyor, the hingeable conveyor being movable laterally relative to the sloped gravity conveyor.

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9. The system, according to claim 8, in which a flexible joint connects the hingeable conveyor to the sloped gravity conveyor.

10. The system, according to claim 9, in which a flip-up bridge is connected to the hingeable conveyor.

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11. The system, according to claim 10, in which the sloped gravity conveyor includes at least one gravity curve.

12. The system, according to claim 11, in which the sloped gravity conveyor includes two gravity curves.

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13. The system, according to claim 12, in which the sloped gravity conveyor further includes a plurality of speed controllers connected to the parallel product accumulation lanes.

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14. The system, according to claim 13, in which each of the product accumulation lanes includes a brake/metering mechanism actuatable thereagainst to frictionally engage the accumulation lanes for stopping the product cases located thereon.

15. The system, according to claim 14, in which the sloped gravity conveyor further includes the raisable guides, each raisable guide being a movable chute located downstream from the gravity curves.
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16. The system, according to claim 1, in which each of the second case guides includes a pair of independent mixing lanes.
17. The system, according to claim 16, in which a case switch is connected to the mixing lanes.
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18. The system, according to claim 17, in which a motorized conveyor system is connected to the case switch.
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19. The system, according to claim 18, in which the motorized conveyor system includes three conveyors.
20. The system, according to claims 5 and 19, in which three palletizing stations are connected to the three conveyors.
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21. The system, according to claim 4, in which the depalletizing station includes a main support frame having a mezzanine level with a lift access opening therein, the lift access opening being sized and shaped to receive therethrough a pallet having thereon the product case.
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22. The system according to claim 21, in which the depalletizing station further includes a pallet hold/empty pallet eject mechanism connected to the mezzanine level.
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23. The system, according to claim 21, in which the depalletizing station further includes a pallet infeed conveyor having thereon a full pallet of the product case.

24. The system, according to claim 21, in which the depalletizing station further includes a stationary lift to raise the full pallet to the mezzanine level.

25. The system, according to claim 4, includes sixteen depalletizer stations.

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26. A depalletizing station assembly for use with a conveyor system, the assembly comprising:

- a conveyor end portion hingeably connected to one end of the conveyor system and in communication with a pallet having thereon a product case, the product case being received on the conveyor end portion from the pallet, the conveyor end portion being laterally movable relative to the conveyor system.

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27. The assembly, according to claim 26, further includes a main support frame having a mezzanine level, the mezzanine level having a lift access opening therein, the opening being sized and shaped to receive therethrough the pallet.

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28. The assembly, according to claim 27, further includes a pallet hold/empty pallet eject mechanism connected to the mezzanine level.

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29. The assembly, according to claim 28, further includes a stationary lift to raise the full pallet to the mezzanine level.

30. The assembly, according to claim 29, further includes a pallet infeed conveyor having thereon a full pallet of the product case.

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31. The assembly, according to claim 30, further includes a flip-up bridge connected to the end of the conveyor end portion, the flip-up bridge resting on the frame.

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32. The assembly, according to claim 31, in which a flexible joint connects the conveyor end portion to the conveyor system.

33. An order handling system, the system including:

- at least two depalletizing stations, each depalletizing station being dedicated to a different product unit;
- 5 - at least two accumulating conveyor systems in communication with the depalletizing stations, the accumulating conveyor system including a twisted sloped gravity conveyor having a pair of independent product accumulation lanes for receiving at least one case of the same product thereon;
- 10 - a pair of raisable guides connected downstream of the product accumulation lanes and in communication therewith;
- 15 - a mixing conveyor disposed between the depalletizing stations for feeding the cases away from the accumulation conveyor systems, the mixing conveyor being connected to the accumulating conveyor systems and located downstream therefrom, the mixing conveyor having at least two independent mixing lanes, the mixing lanes being continuous with the product accumulation lanes, the raisable guides being lowered to allow the product cases from the product accumulation lanes to merge onto the mixing lanes;
- 20 - at least two palletizing stations connected to the mixing conveyor.

34. The system, according to claim 33, includes sixteen depalletizing stations.

35. The system, according to claim 33, includes three palletizing stations.